



MARCH 2012

## Issue Brief

# Paying More for Primary Care: Can It Help Bend the Medicare Cost Curve?

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Commonwealth Fund pub. 1585  
Vol. 5

**ABSTRACT:** The health reform law boosted Medicare fees for primary care ambulatory visits by 10 percent for five years starting in 2011. Using a simulation model with real-world parameters, we evaluate the effects of a permanent 10 percent increase in these fees. Our analysis shows the fee increase would increase primary care visits by 8.8 percent, and raise the overall cost of primary care visits by 17 percent. However, these increases would yield more than a sixfold annual return in lower Medicare costs for other services—mostly inpatient and postacute care—once the full effects on treatment patterns are realized. The net result would be a drop in Medicare costs of nearly 2 percent. These findings suggest that, under reasonable assumptions, promoting primary care can help bend the Medicare cost curve.

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### OVERVIEW

Among provisions in the Affordable Care Act of 2010 is a temporary, five-year, 10 percent increase in Medicare payments for primary care services. The law defines these services as office and other ambulatory visits furnished by primary care physicians (PCPs)—including family practice physicians, general internists, geriatricians, and pediatricians—as well as nurse practitioners, clinical nurse specialists, and physician assistants. For practitioners to qualify for these higher payments, at least 60 percent of their Medicare-allowed charges in a prior period must be for primary care services.<sup>1</sup>

Congress intended this provision, along with others in the law, to reorient health care delivery toward more primary care by providing primary care practices with new resources. In this issue brief, we use a simulation model with empirically based parameters to assess this underlying assumption in the context of a permanent increase in payments for primary care.

Although legislators originally included the fee increase as a permanent budget-neutral provision, offset by fee cuts to other physicians, opposition by

specialist groups killed the budget-neutrality component. Instead, Congress made the provision temporary to keep the legislation's estimated costs—as scored by the Congressional Budget Office (CBO)—in line with the Obama administration's spending target.

While many legislators may have assumed that the temporary fee increase would become permanent (like other temporary changes to fee schedules), whether medical practitioners make this assumption is less clear. If they perceive the increase as temporary—which is likely, given the current political emphasis on deficit reduction—the provision will be less effective in achieving its goals. By itself, a five-year, relatively modest fee increase is unlikely to influence medical students to pursue careers in primary care. Nor is a temporary increase likely to affect primary care providers' business decisions to invest in practice changes, such as by adopting health information technology or hiring “physician extenders,” who include nurse practitioners and physician assistants. A temporary fee increase is also less likely to spur PCPs to devote more time to evaluation and management (E&M) services rather than more lucrative services such as diagnostic tests and procedures.

The CBO score for the modest fee increase (along with a similar temporary fee increase for general surgeons practicing in health professional shortage areas, contained in the same section of the Affordable Care Act) showed that Medicare spending would rise by \$3.5 billion from 2010 to 2019, with most of the increase occurring from 2011 to 2015. This finding presumably reflected limited provider responses to the temporary provision. It is unclear whether the CBO would have scored a permanent fee increase as a cost saver, although the agency has a history of underestimating savings from Medicare payment reforms.<sup>2</sup>

We used a simulation model to predict the long-run annual budgetary impact of a permanent increase in primary care fees, to allow medical markets time to fully adapt to it.<sup>3</sup> Simulation models use behavioral relationships estimated using available data to predict the effects of proposed policies, where observational data on comparable policies in similar contexts is not available. This approach is widely used by state

and federal governments to help officials formulate policy both inside and outside the health arena.

Our model shows that a modest but permanent 10 percent increase in fees for primary care visits would boost the use of E&M services in primary care. And that, in turn, would reduce total Medicare spending by nearly 2 percent per year in the long run—mainly because of reductions in hospitalizations, outpatient services, and postacute care. Those savings would significantly offset the extra funds allocated to primary care.

## BACKGROUND

The 10 percent fee increase was only one of a set of Affordable Care Act provisions intended to support and expand primary care. Among other provisions, the law also provides for a two-year increase in payments for primary care physicians treating Medicaid patients, and offers incentives for teaching hospitals to produce more primary care physicians, and for medical students to enter primary care specialties. The law also funds demonstrations of reforms to health care delivery and payment systems oriented toward primary care, such as patient-centered medical homes.

Over the past decade, Medicare fees and spending for specialist services—particularly ancillary services such as diagnostic tests and procedures—have risen far more rapidly than fees and spending for E&M services, which PCPs typically provide. Those higher payments have contributed to faster growth in specialist services than in E&M patient visits.<sup>4</sup> And commercial insurers and state Medicaid plans often build their fee schedules on Medicare's, further widening the income gap between PCPs and other physician specialists, and contributing to the shrinking number of medical students choosing to enter primary care.<sup>5</sup>

The Medicare fee schedule's low valuation of E&M visits—the bread and butter of primary care—relative to ancillary services may have also encouraged PCPs to alter their mix of services away from E&M and toward more imaging, other diagnostic testing, and minor procedures, as evidenced by surprisingly high rates of ownership by PCP practices of equipment for these services.<sup>6</sup> These trends—along with anticipated rapid growth in demand for primary care arising from

expanded insurance coverage under the Affordable Care Act, and the aging of the population—have many concerned that the nation faces a looming shortage of primary care providers.<sup>7</sup>

Can paying more for primary care end up saving the entire Medicare program money? Hadley et al. found that higher Medicare fees for specific services, including office-based E&M, spur more provision of these services to Medicare patients.<sup>8</sup> In a recent literature review, Friedberg, Hussey, and Schneider found that the majority of evidence points to the benefits of primary care, including its potential to lower costs.<sup>9</sup> Primary care does so by detecting disease earlier, substituting less-costly care for more expensive specialist services, providing greater coordination of care and less duplication of services, and reducing preventable hospitalizations.

No studies specifically relate relative payments for primary care versus other services to costs or outcomes. However, compelling evidence suggests the benefits of delivery systems that emphasize primary care, such as the patient-centered medical home and the Chronic Care Model, which encourages consistent care for chronic diseases such as diabetes. To reorient the health care system toward primary care, Friedberg, Hussey, and Schneider cite payment reforms—including those that narrow the disparity between E&M services and tests and procedures—as an important component.

### **How This Study Was Conducted**

Our simulation aimed to measure the impact of raising rates for ambulatory E&M visits by primary care providers relative to rates for other services, in isolation from other components of health care reform and overall changes to the Medicare fee schedule. Our model provides two sets of projections: a “baseline” projection that assumes no extra fee increase for primary care relative to other services, and a “policy” projection that incorporates the 10 percent fee increase for primary care E&M visits. Reflecting the Affordable Care Act, we assumed that the 10 percent fee increase for primary care visits took effect in January 2011, with annual updates in later years equal to those assigned to other physician services. (Data constraints prevented us from replicating the Medicare criterion that only

practices with 60 percent primary care services in the prior year qualify for higher payments.)

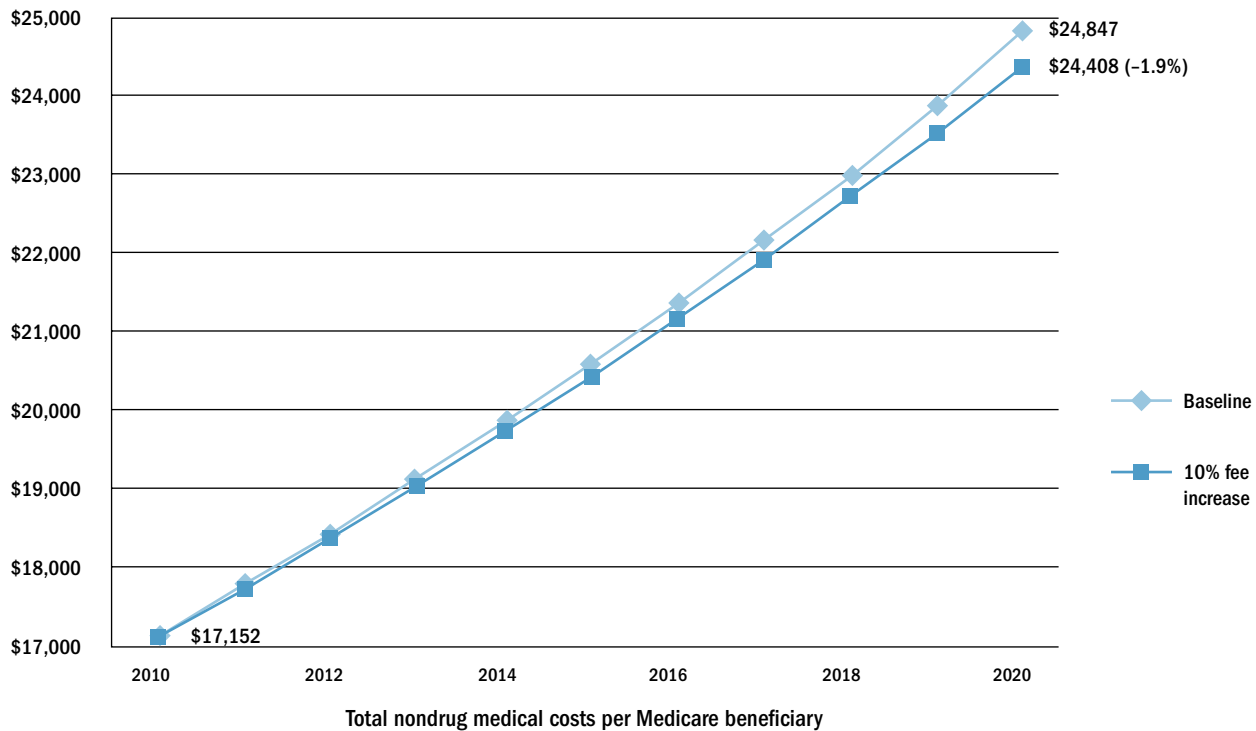
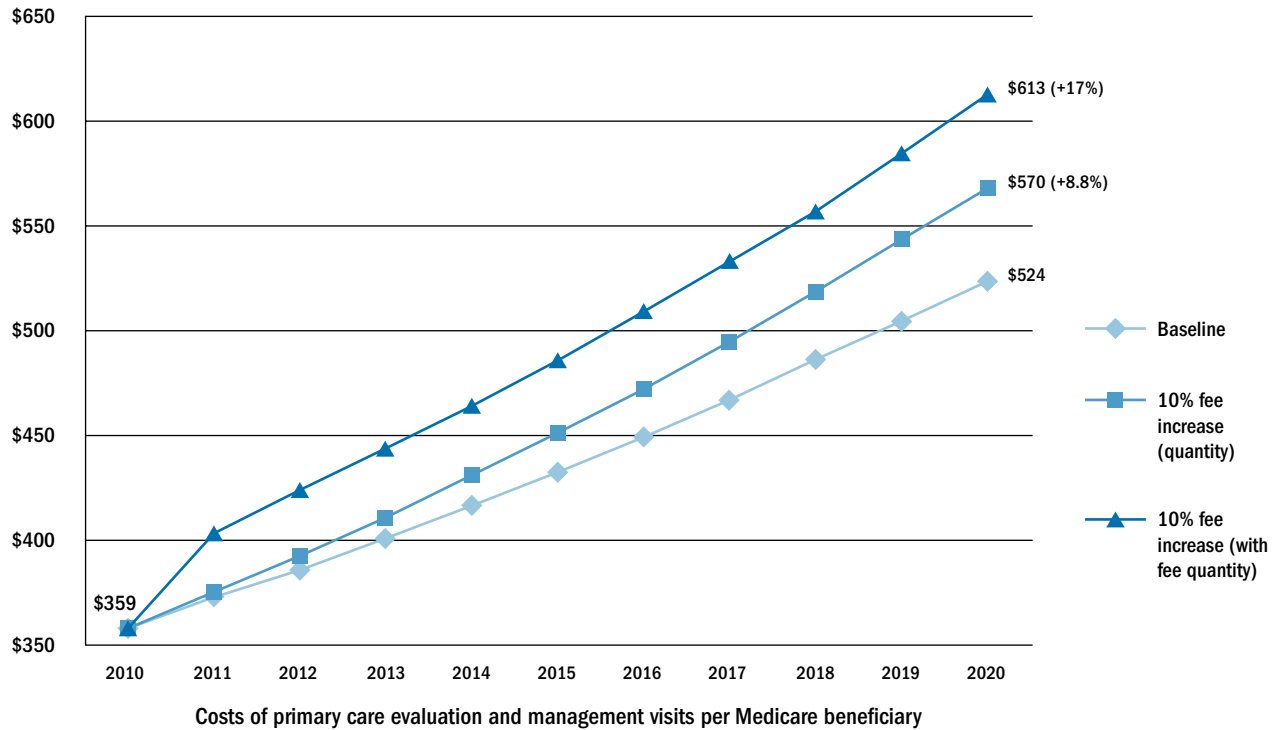
We used the simulation to estimate the long-run response in services and spending to a change in fees. Our model does not identify the precise mechanisms by which the supply of primary care E&M visits changes (such as by spurring changes in the number of providers, or the use of physician extenders), or the length of time needed to fully realize those effects. However, we did assume that the full impact of the policy occurs by 2020, and, for convenience, that the percentage growth in service use is constant over this 10-year period.

Our model uses three years of paid Medicare claims for some 2.7 million beneficiaries age 65 and older enrolled in the traditional fee-for-service program who did not have end-stage renal disease (ESRD).<sup>10</sup> These elders had at least one contact from 2004 to 2006 with any of 5,554 physicians who treated Medicare patients and responded to the 2004–2005 Community Tracking Study (CTS) Physician Survey, conducted by the Center for Studying Health System Change. The CTS Physician Survey uses a sample that is representative of nonfederal physicians practicing in the continental United States who provide 20 or more hours of direct patient care per week. The sample includes respondents from 60 nationally representative communities. The beneficiary sample linked to physicians was weighted to be nationally representative. We used the 2004–2006 claims data set to predict the growth in nonphysician service categories over time.

We standardized Medicare costs mostly by assigning a national average cost to each service—representing total allowed charges (payments that providers received from Medicare, patients, and other insurers). Those costs were constructed to be independent of the geographic location where services were provided, whether providers received extra payments intended to further other social goals (extra payments to teaching hospitals, for example), and the method of payment within a class of providers (such as cost-based reimbursement for critical-access hospitals, versus prospective payments for diagnosis-related groups for other hospitals).

We supplemented these claims data with another linked CTS Physician Survey–Medicare data

**Exhibit 1. Impact of a 10% Increase in Medicare Fees for Primary Care Visits on the Cost of Primary Care and Total Per-Beneficiary Costs, 2010–2020 (2010 dollars)**



Note: Top figure: The medium blue line includes rising costs stemming from more visits per beneficiary, which result from a 10% increase in fees to primary care providers. (This line does not include the actual cost of the higher fees.) The dark blue line includes the cost of the higher fees. All costs include allowed charges by providers paid by Medicare, other insurers, and patients.

set with claims from 2000 and 2005. We used this data set to estimate how physicians would respond to higher fees for primary care and other physician services.

*For more complete accounts of how we conducted this study, see the [Appendix](#) on page 10, or an even more detailed account in a technical appendix available at [http://www.commonwealthfund.org/~media/Files/Publications/Issue%20Brief/2012/Mar/Reschovsky\\_technical\\_appendices\\_FINAL.pdf](http://www.commonwealthfund.org/~media/Files/Publications/Issue%20Brief/2012/Mar/Reschovsky_technical_appendices_FINAL.pdf).*

## WHAT OUR MODEL SHOWS: OVERALL COST SAVINGS

Our simulation finds that raising fees for primary care ambulatory E&M visits will increase the use and cost of these visits but will lower overall Medicare costs (Exhibit 1). Under our baseline scenario, the average annual cost per beneficiary of primary care E&M visits in ambulatory settings is projected to rise 46 percent by 2020, from an annual base of \$359 per beneficiary in 2010 (in 2010 dollars).

Predictions from the two-part primary care supply equations estimated for the model (not shown) suggest that higher primary care fees increase both the likelihood that PCPs will treat Medicare beneficiaries and, more importantly, the quantity of E&M services PCPs provide to Medicare patients. Higher fees for primary care beginning in 2011 increase the number of primary care visits by less than one visit per beneficiary, raising the cost of primary care by 8.8 percent. If we factor in the cost of the 10 percent increase in reimbursement, the total per-beneficiary cost for primary care services under the policy scenario is 17 percent higher than under the baseline scenario.

However, although the cost of primary care visits rises relative to the baseline, this cost represents only about 2 percent of total Medicare costs. Our projections show that total per-beneficiary costs—which include primary care and all other costs—decline 1.9 percent in the long run. That is because cost savings from reduced use of other services are more than six times the added costs of more E&M visits per beneficiary and higher payments per E&M visit according to the model.<sup>11</sup> That means savings for the Medicare program, beneficiaries, and supplemental insurers,

although Medicare would reap the large majority of those savings.

## Sources of the Cost Savings

Exhibit 2 breaks down these significant cost savings by spending category. For ease of presentation, we combined some smaller Medicare Part B spending categories, as well as other closely related categories, reducing 19 spending categories to 12.

Primary care E&M services can substitute for other services or complement them. For instance, we estimate that the costs of other E&M visits—inpatient visits and outpatient visits provided by specialists—will decline by 3.6 percent, but that the overall costs of imaging and other diagnostic tests will rise. The costs of minor and major procedures are projected to decline slightly. Other Part B costs are projected to rise by more than 4 percent.

Most cost savings are achieved through lower predicted use of hospital care and associated postacute care. The cost per beneficiary of hospital outpatient care—including emergency department services not resulting in admission—also drops. Baseline inpatient costs alone account for over 40 percent of total Medicare costs, and we project the primary care fee increase to reduce these costs by around 4 percent relative to the baseline projection. Consistent with this decrease in inpatient costs, we see a 3.6 percent drop in costs for the use of skilled nursing facilities, and a 3.5 percent drop in costs for the use of home health and hospice services. Hospital outpatient costs also decline by about 4.6 percent relative to baseline.

The precise savings stemming from these effects are uncertain, as they rest on assumptions concerning future cost trends and other factors. However, the impact of greater provision of E&M services by primary care providers in lowering total costs persisted when we conducted a series of sensitivity analyses (see [Appendix](#)).

## IMPLICATIONS OF OUR FINDINGS

Our results suggest that even a modest permanent increase in payments for ambulatory E&M visits to primary care physicians could reduce the rate of growth in Medicare spending by increasing the provision of

**Exhibit 2. Impact of Increase in Fees for Primary Care E&M Visits,  
by Type of Service, in 2020**

<b>Service category</b>	<b>Predicted baseline standardized costs per beneficiary<sup>a</sup></b>	<b>Percent of total baseline costs</b>	<b>Percentage change relative to baseline</b>
Primary care E&M visits	\$524	2.1%	
Cost increase from more visits <sup>b</sup>	—	—	8.8%
Cost increase from 10% fee increase <sup>b</sup>	—	—	8.2
Other E&M visits	1,682	6.8	-3.6
Other Medicare Part B services	1,478	5.9	4.1
Imaging	1,296	5.2	2.1
Diagnostic tests	346	1.4	5.0
Minor procedures	691	2.8	-0.6
Major procedures	1,239	5.0	-0.4
Part B drugs	1,028	4.1	4.2
Hospital outpatient	1,832	7.4	-4.6
Inpatient care	10,016	40.3	-4.0
Skilled nursing facilities	3,027	12.2	-3.6
Home health and hospice	1,688	6.8	-3.5
<b>Total<sup>b</sup></b>	<b>\$24,847</b>	<b>100.0%</b>	<b>-1.9%</b>

<sup>a</sup> In 2010 dollars.

<sup>b</sup> Cost increases from the two components of primary care visits total \$89 per beneficiary. However, total costs—including the increases in the cost of primary care—drop \$482 relative to the baseline prediction.

Source: HSC-CMWF Medicare Simulation Model.

E&M services by primary care providers. Over time, significant cost savings accrue from reduced hospital inpatient and outpatient care as well as postacute care.

While we can only speculate on the underlying mechanisms that might be driving our findings, the most logical explanation is that more primary care can prevent ambulatory care-sensitive conditions from getting worse, preventing hospitalizations, emergency room visits, and outpatient procedures, or reducing the severity of cases when inpatient care is required. Savings in postacute care follow from fewer and less-severe hospitalizations.

Roughly 5 percent of Medicare beneficiaries are hospitalized for at least one ambulatory care-sensitive condition each year.<sup>12</sup> A typical hospitalization prevented would offset the cost of many primary care E&M visits.

Reductions in other physician visits stemming from higher payments for primary care yield smaller overall cost savings, according to our simulation. Some

of these savings might reflect fewer visits to hospitalized patients by primary care physicians, hospitalists, or specialist physicians. Devoting more resources to primary care visits could also alter the clinical threshold beyond which primary care physicians refer patients to specialists. Improved outcomes from greater primary care could also reduce the need for specialist care. All these findings suggest that raising fees for primary care could lead to better clinical outcomes as well as lower costs.

**Should Medicare Extend Higher Fees to Specialists Who Provide Primary Care?**

If increasing fees for primary care physicians who provide E&M services reduces total costs, might extending higher reimbursements to specialists who provide primary care services have a similar impact? Measuring that effect presents practical difficulties. Primary care and specialist physicians often treat the same conditions, and determining whether a patient is



best served by a primary care physician or a specialist is difficult. What's more, both primary care and specialist physicians use the same visit codes and other codes to bill Medicare, so determining whether services provided by a specialist were specialist care or primary care is challenging and subject to abuse.

There is a large, inconsistent, and often methodologically flawed literature comparing the quality of care provided by primary care and specialist physicians for given conditions. Most studies have found that specialists who manage conditions within their domain do a better job than do primary care physicians.<sup>13</sup> However, for conditions outside their specific domain, specialists are likely to provide inferior primary care compared with PCPs. Thus the impact on total costs of extending higher fees for primary care services to specialists is uncertain.

## POLICY RECOMMENDATIONS

Although the current political climate is not conducive to policies that appear to increase entitlement spending, our results show that Congress should make the 10 percent increase in fees for primary care permanent now. Such an increase is projected to help bend the Medicare cost curve in coming years.

More broadly, our results endorse the wide array of provisions in the Affordable Care Act and other policy proposals that aim to reorient the health care delivery system to provide more primary care. As an example of the latter, the Centers for Medicare and Medicaid Services is more aggressively striving to reduce the number of "relative value units" assigned to "over-valued" services, which will increase the payment for historically undervalued primary care services.<sup>14</sup> Such administrative adjustments can have the same impact as legislated increases in payments for primary care.

As with any simulation model, our analysis has limitations. Models abstract a complex world and rely on estimates of behavioral responses and various assumptions. For example, our model is static, meaning that we do not model how non-primary care providers might respond to reductions in demand for their services. This implies that our projected cost savings may be somewhat overstated.

However, although the exact savings are uncertain, the model projects long-run savings from a permanent increase in fees for primary care many times larger than the cost of the policy, so our basic conclusions are likely to hold. Moreover, our results are consistent with considerable evidence from both regional comparisons within the United States and international comparisons, as well as other evidence.<sup>15,16</sup>

Another limitation of our model is that it does not address the precise mechanism by which primary care services would increase as a result of higher fees, or the amount of time needed for the full impact to occur. Some adaptations might occur quickly (such as substitution of E&M visits for other services), while others would take longer (an increase in the supply of primary care providers).<sup>17</sup>

While the results of simulation models are never definitive, policymakers must often rely on such analytical tools when direct evidence from comparable policy interventions is not available. Without such models, isolating and predicting the effects of specific policy changes is often impossible. While imperfect, the alternative—policymaking without benefit of any evidence—would be worse.<sup>18</sup>

Despite other provisions in the Affordable Care Act that could complement the fee increase for primary care, further payment reforms are an important component of redesigning the health care system to become more primary care-oriented and efficient.<sup>19</sup> Moving away from fee-for-service reimbursement to well-designed prospective payments or mixed payment systems could move the market toward greater efficiency, for example. Payments to accountable care organizations—groups of doctors, hospitals, and other providers that coordinate care for Medicare patients—are among such reforms. Subsidies and support for physicians who offer patient-centered medical homes will improve care for many suffering from chronic conditions and may reduce long-term costs.

The widespread changes in the health care delivery system that these policies are designed to encourage will take time. In the nearer term, correcting pricing distortions in the fee-for-service approach by linking provider payments to health care value can move the system in the right direction.<sup>20</sup>

## NOTES

- <sup>1</sup> Sect. 5501, P.L. 11-148. The law includes an accompanying provision to pay a 10 percent bonus for major surgical procedures by general surgeons practicing in “health professional shortage areas” designated by the Health Resources and Services Administration.
- <sup>2</sup> J. Gabel, “Congress’s Health Care Numbers Don’t Add Up,” *New York Times*, Aug. 26, 2009, p. A-21.
- <sup>3</sup> We call our model the HSC–CMWF Medicare Simulation Model, as it represents the work of the Center for Studying Health System Change and funding by The Commonwealth Fund.
- <sup>4</sup> P. B. Ginsburg and R. A. Berenson, “Revising Medicare’s Physician Fee Schedule—Much Activity, Little Change,” *New England Journal of Medicine*, March 22, 2007 356(12):1201–3.
- <sup>5</sup> T. Bodenheimer, R. A. Berenson, and P. Rudolf, “The Primary Care–Specialty Income Gap: Why It Matters,” *Annals of Internal Medicine*, Feb. 20, 2007 146(4):301–6; and C. P. West, M. M. Drefahl, C. Popkave et al., “Internal Medicine Resident Self-Report of Factors Associated with Career Decisions,” *Journal of General Internal Medicine*, Aug. 2009 24(8):946–49.
- <sup>6</sup> J. D. Reschovsky, H. H. Pham, and A. Cassil, “Physician Ownership of Medical Equipment,” HSC Data Bulletin No. 36 (Washington, D.C.: Center for Studying Health System Change, 2010).
- <sup>7</sup> T. Bodenheimer and H. H. Pham, “Primary Care: Current Problems and Proposed Solutions,” *Health Affairs*, May 2010 29(5):799–805; and A. N. Hofer, J. M. Abraham, and I. Moscovice, “Expansion of Coverage Under the Patient Protection and Affordable Care Act and Primary Care Utilization,” *Milbank Quarterly*, 2011 89(1):69–89.
- <sup>8</sup> J. Hadley, J. D. Reschovsky, C. Corey et al., “Medicare Fees and the Volume of Physicians’ Services,” *Inquiry*, Winter 2009–2010 46(4):372–90.
- <sup>9</sup> M. W. Friedberg, P. S. Hussey, and E. C. Schneider, “Primary Care: A Critical Review of the Evidence on Quality and Costs of Health Care,” *Health Affairs*, May 2010 29(5):766–72.
- <sup>10</sup> ESRD requires expensive ongoing dialysis and is a separate eligibility category in Medicare, not tied to age.
- <sup>11</sup> The model projects that under the fee increase, primary care costs will rise by \$89 per beneficiary while the cost of other services declines by \$571, for a net drop of \$482 per beneficiary in 2010 dollars.
- <sup>12</sup> N. McCall, J. Harlow, and D. Dayhoff, “Rates of Hospitalization for Ambulatory Care Sensitive Conditions in the Medicare+Choice Population,” *Health Care Financing Review*, 2001 22(3):127–45. The 5 percent figure also conforms with unpublished tabulations by the authors.
- <sup>13</sup> P. G. O’Malley and A. S. O’Malley, “Studies Comparing Quality of Care by Specialty: Valid, Relevant, or Neither?” *Archives of Internal Medicine*, Jan. 8, 2007 167(1):8–9.
- <sup>14</sup> Centers for Medicare & Medicaid Services, “CMS Announces Policy, Payment Rate Changes for the Physician Fee Schedule in 2012,” press release, Nov. 1, 2011. Available at <http://www.cms.gov/apps/media/press/release.asp?Counter=4156&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&keywordType=All&chkNewsType=1%2C+2%2C+3%2C+4%2C+5&intPage=&showAll=&pYear=&year=&desc=&cboOrder=date>.
- <sup>15</sup> See, for instance, B. Starfield and L. Shi, “Policy-Relevant Determinants of Health: An International Perspective,” *Health Policy* 2002 60:201–18; P. Franks and K. Fiscella, “Primary Care Physicians and Specialists as Personal Physicians: Health Care Expenditures and Mortality Experience,” *Journal of Family Practice* 1998 47:105–9; K. Baicker and A. Chandra, “Medicare Spending, the Physician Workforce, and Beneficiaries’ Quality of Care,” *Health Affairs* 2004W4: 184–97; and B. Starfield, L. Shi, and J. Macinko, “Contribution of Primary Care to Health Systems and Health,” *Milbank Quarterly* 2005 83(3):457–502.



- <sup>16</sup> Research indicates that costs are lower where PCP supply is greatest, but that PCP supply is not associated with the rate of cost growth (M. E. Chernew, L. Sabik, A. Chandra, and J. P. Newhouse, “Would Having More Primary Care Doctors Cut Health Spending Growth? *Health Affairs* 2009 28(5):1327–35). Hence payment reforms in concert with other measures to increase the supply of primary care providers could have multiplicative effects.
- <sup>17</sup> Primary care physicians may also have considerable latitude in changing the mix of services they provide. In 2006, procedures, imaging, and other diagnostic tests accounted for about 20 percent of services provided by PCPs, and outpatient E&M services accounted for 40 percent. Inpatient E&M visits accounted for most of the remainder (authors’ calculations). However, these figures are somewhat biased because the sample included hospitalists, who are mostly internists and may be classified as primary care physicians.
- <sup>18</sup> One might suppose that waiting for data on medical claims from 2011 and beyond would provide a better opportunity to assess the impact of the fee increase, but that is not the case. First, as noted, the response by PCPs to a temporary fee increase will most likely be smaller than to a permanent one. Second, responses to changes in the Medicare fee schedule are likely to be gradual, so short-term effects would fail to capture potential long-run benefits. Finally, there is no practical way to empirically assess the effects of a temporary fee increase now or even after its five-year run, because too many other provisions in the Affordable Care Act and annual changes in Medicare payments are occurring concurrently.
- <sup>19</sup> Friedberg, Hussey, and Schneider, “Primary Care: A Critical Review of the Evidence on Quality and Costs of Health Care,” 2010.
- <sup>20</sup> The fee increase for primary care visits will likely prove effective because it alters relative prices. However, making uniform cuts in fees for other services while holding fees for primary care visits constant is unlikely to have parallel effects. Physicians have been subject to across-the-board fee reductions (after accounting for inflation) for the last decade. Providers have responded by altering the mix of services they offer toward those with larger profit margins and away from those with low margins (Hadley et al., “Medicare Fees and the Volume of Physicians’ Services,” 2010). As a result, the volume of services and their total costs have risen rapidly. To be effective, pricing reforms should not occur across the board. Instead, they should correct the number of “relative value units” that Medicare assigns to services to better represent their underlying relative costs. Or provider fees should reflect the relative benefits of medical services, if studies of their comparative effectiveness are available.

## APPENDIX. STUDY DATA AND METHODOLOGY

### DATA

Our study used three years of paid Medicare claims for some 2.7 million elderly beneficiaries enrolled in the traditional fee-for-service program who did not have end-stage kidney disease. These elders had at least one contact from 2004 to 2006 with any of 5,554 physicians who treated Medicare patients and responded to the 2004–2005 Community Tracking Study (CTS) Physician Survey, conducted by the Center for Studying Health System Change. The CTS Physician Survey uses a sample that is representative of nonfederal physicians practicing in the continental United States who provide 20 or more hours of direct patient care per week (N=6,627).

Physicians were sampled from 60 nationally representative communities.<sup>i</sup> Beneficiary observations are weighted by to be nationally representative, although the sample is slightly sicker because the sample lacks observations on the small percentage of beneficiaries without any physician services over the three-year period.<sup>ii</sup> Sample characteristics on average per-beneficiary Medicare spending and mortality rates closely match corresponding federal administrative data.

Medicare payments for services are not a good measure of the quantity of services provided, because of regional price adjustments, differences in

patient cost-sharing owing to different deductibles and coinsurance amounts, and disparities in what different classes of providers are paid for identical services. Using a variety of techniques outlined in the technical appendix, we assigned a common value to each to each service—representing total allowed charges, that is, total payments that providers received from Medicare, patients, and other insurers. Those standardized costs were therefore independent of the location where providers provided services, whether they received extra payments (such as indirect medical education payments to teaching hospitals), and the method of payment within a class of providers (such as cost-based reimbursement for critical-access hospitals, versus prospective payments for diagnosis-related groups for other hospitals).

We supplemented these claims data with another linked CTS Physician Survey–Medicare data set with claims from 2000 and 2005 in which non-pediatrician physicians were the unit of observation (N=13,707). We used this data set to estimate how physicians would respond to higher payments for primary care services and other physician services. This data set and the methods used to estimate these models are described in greater detail elsewhere.<sup>iii</sup>

### SIMULATION METHODS

Our simulation aimed to measure the impact of raising fees for ambulatory E&M visits relative to fees for other physician services, in isolation from other components of health care reform and overall changes to the Medicare fee schedule. We simulated a 10 percent increase in fees for ambulatory E&M visits for primary care physicians and allied health professionals. Our fee increase was similar to the temporary one under the Affordable Care Act, although data constraints prevented us from replicating the criterion that only

<sup>i</sup> Physicians were sampled from the master files of the American Medical Association and American Osteopathic Association, which include all licensed physicians. Physicians without regular direct patient contact (such as radiologists, anesthesiologists, and pathologists) were excluded. Interviews were conducted by computer-assisted telephone interviewing. The response rate was 52.4 percent. More detail is available at <http://hschange.org/CONTENT/888/>. The survey was funded by the Robert Wood Johnson Foundation.

<sup>ii</sup> We weighted the beneficiary observations to account for the probability of selection, and omitted about half a million beneficiaries who were: 1) not living in the 60 CTS communities; 2) enrolled in Medicare Advantage at any point during the three-year period; or 3) aged into Medicare during any given year.

<sup>iii</sup> Hadley et al., “Medicare Fees and the Volume of Physicians’ Services,” 2010.

practices with 60 percent primary care services in the prior year qualify for higher payments.

The model makes separate though interrelated spending projections from 2007 to 2020 for 19 categories of services covered under Medicare Part A and Part B. A central component of the simulation is the projection of primary care E&M visits in ambulatory settings, including doctors' offices, nursing homes, and outpatient clinics. This service category is directly affected by a one-time 10 percent fee increase beyond the assumed annual fee increase for all physician services. Predictions from this model also affect predictions for the other 18 service categories.

We based predictions for primary care services on two parameters: elasticity in the supply of physician services with respect to Medicare fees—that is, the percentage change in services resulting from a one percent increase in fees—and a time trend. These parameters, in turn, were based on a two-part general linear physician supply model.

The first equation, estimated on all sample physicians, is a logit function of the probability that a physician provides any primary care visits to his or her Medicare patients. The second equation, using only observations on physicians who provided primary care visits, used relative value units (RVUs) for primary care visits per treated Medicare beneficiary as the dependent variable. Explanatory variables included a Medicare fee term, CTS site and year indicators, and a measure of the average health status of each physician's Medicare patients (based on the Hierarchical Coexisting Condition Model of the Centers for Medicare & Medicaid Services). For a given physician, the predicted supply of primary care RVUs per beneficiary is the product of predictions from the two equations.<sup>iv</sup>

Using the 2000/2005 data set, we calculated the number of primary care ambulatory E&M services (measured by RVUs) per beneficiary for each county

each year.<sup>v</sup> This variable was entered into the physician-supply equations for non-primary care physician services as a “quasi” cross-price effect. Otherwise, estimation of the models for other physician services paralleled that of the primary care model. However, two elasticities were calculated from each equation and entered into the model's forecasting: supply elasticity with respect to price, and supply elasticity with respect to the provision of primary care E&M services in ambulatory settings. That allowed us to model the impact of changes in primary care provision resulting from the fee increase on other physician services.

We used the 2004–2006 claims data set to predict growth in 11 nonphysician service categories over time. Mean county/year costs per beneficiary were calculated for each of these categories (N=740).<sup>vi</sup> We constructed county/year-level variables from the 60 CTS sites that measured the percentage change in RVUs per beneficiary for each of the 19 service categories. We then estimated 11 ordinary least-squares regression equations (one for each of the nonphysician service categories) in which the percentage change in nonphysician utilization within a category from one year to the next was estimated as a function of the corresponding percentage change in utilization in primary care visits as well as the percentage change in utilization in each of the other seven physician categories. Parameters from these 11 models, along with projections for the eight physician services categories, were then used to make projections for the nonphysician service categories.

A key feature of this model is that it allows predictions of growth in ambulatory primary care E&M services to influence growth in each of the other 18 service-category prediction equations. In making predictions, we assumed that other factors, such

<sup>iv</sup> We adapted the Medicare fee variable from one developed in Hadley et al., “Medicare Fees and the Volume of Physicians' Services,” 2010.

<sup>v</sup> The sample was restricted to beneficiaries from the 60 nationally representative local market areas where the CTS sampled physicians, so adequate observations were available in each county.

<sup>vi</sup> The 11 nonphysician categories include some physician services—specifically those provided by radiologists, anesthesiologists, and pathologists, who were not included in the CTS Physician Survey.

as annual updates in Medicare fees and inflation in the price of inputs to health care (measured by the Medicare Economic Index), would continue at average rates from the past decade.<sup>vii</sup> These assumptions, while influencing how quickly Medicare costs are projected to grow in our baseline model, do not affect the basic analytic question of how increasing fees for primary care relative to other services will affect total costs. We express our model results in inflation-adjusted 2010 dollars. (See Exhibit A1 for a schematic of the simulation model, and the technical appendix, available at [http://www.commonwealthfund.org/~media/Files/Publications/Issue%20Brief/2012/Mar/Reschovsky\\_technical\\_appendices\\_FINAL.pdf](http://www.commonwealthfund.org/~media/Files/Publications/Issue%20Brief/2012/Mar/Reschovsky_technical_appendices_FINAL.pdf), for a more detailed description.)

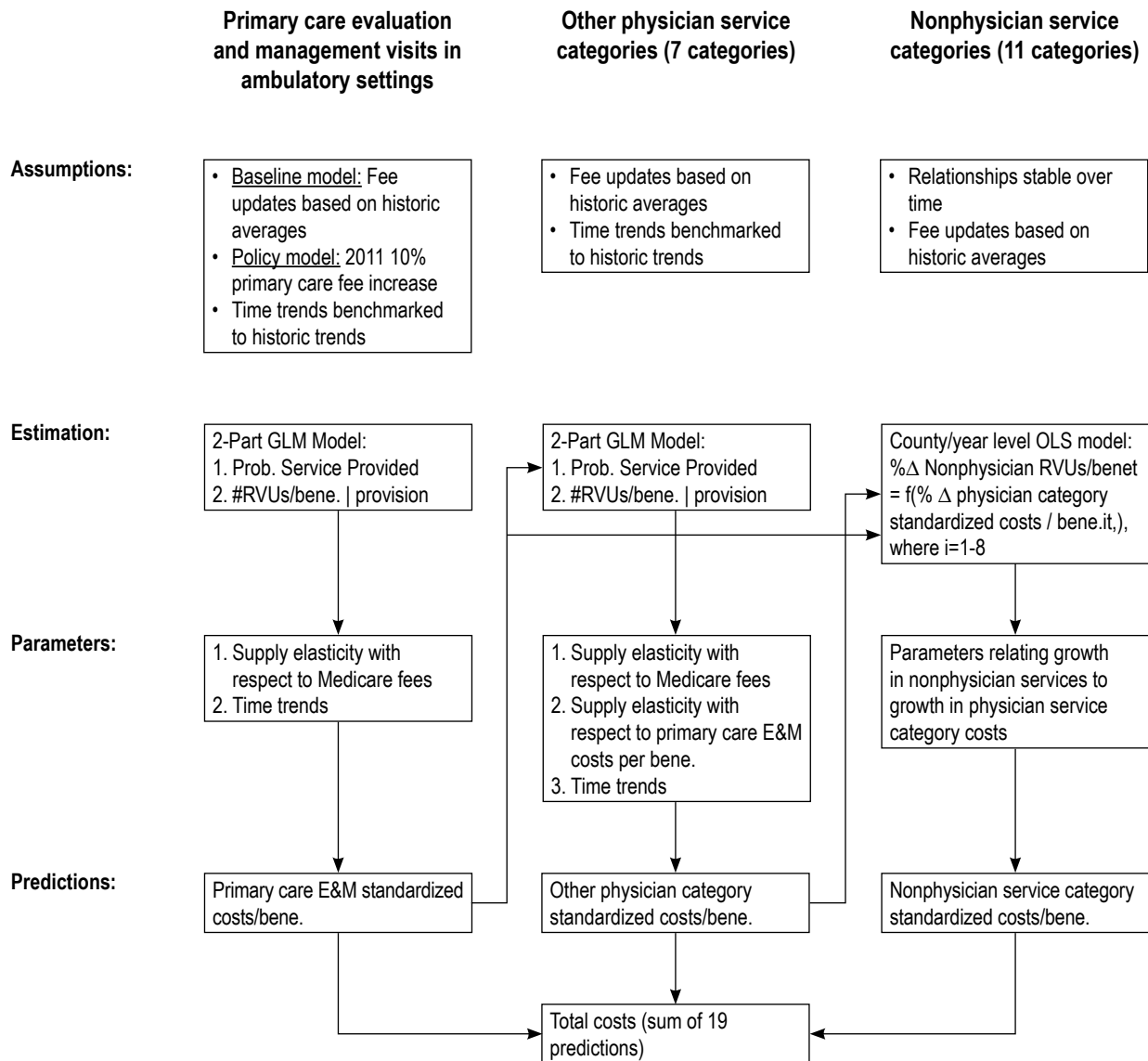
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<sup>vii</sup> Our model differs in this regard from models of the Congressional Budget Office and the Office of the Actuary of the Centers for Medicare & Medicaid Services, which must assume that the “sustainable growth rate” will continue without congressional overrides. By putting our model into inflation-adjusted terms, we treat the 10 percent nominal fee increase as a 7.6 percent increase in inflation-adjusted terms.

## THE POLICY INTERVENTION

Our model provides two sets of projections: a “base-line” projection that assumes no extra fee increase for primary care relative to other services, and a “policy” projection that incorporates the 10 percent fee increase for primary care E&M visits. Reflecting the Affordable Care Act, we assumed that the 10 percent fee increase for primary care visits took effect in January 2011, with annual updates in later years equal to those assigned to other physician services.

Our estimated elasticities in physician services in response to changes in fees should be regarded as long-run responses. Hence, our model does not identify the precise mechanisms spurring changes in the supply of primary care E&M visits (such as changes in the number of providers, or greater use of physician extenders), or the length of time needed for effects to be fully realized. However, we assume that the full impact of the policy will occur by 2020, and for convenience that the percentage growth in service use is constant over the 10-year period. The long-run impact of the policy intervention is insensitive to assumptions about the time period or path required for the full effects to occur.

**Exhibit A1. Schematic of HSC-CMWF Medicare Simulation Model**




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*Editorial support was provided by Sandra Hackman.*



